



## I claim:

- 1. A method enabling the precise creation, fitting, and reproduction of objects comprising the steps of:
- 1) Defining 2-dimensional profile representations of an object
  - 2) Defining 3-dimensional parametric representations of an object
  - 3) Converting the profile and parametric data into an electronic format suitable for input to computer aided design and manufacturing (CAD/CAM) programs
  - 4) Creating a virtual CAD model from the profile and parametric data
- 5) Calculating Numerical Control (NC) motion commands from the CAD model using CAM technology
  - 6) Processing an object using Computer Numerical Controlled (CNC) machine
  - 7) Transmitting data throughout the process, enabling theses steps to be conducted at any combination of geographic locations.

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- 2. The method of claim 1, wherein step 1 comprises a tracing technique to define the 2-dimensional profiles.
- 3. The method of claim 1, wherein step 1 comprises a digitizing device to define the 2-dimensional profiles.
  - 4. The method of claim 1, wherein step 1 comprises an optical scanning process to define the 2-dimensional profiles.
- 5. The method of claim 1, wherein step 1 comprises exposure to a reactive chemical media, to define the 2-dimensional profiles.
  - 6. The method of claim 1, wherein step 1 and step 2 comprise a digitizing device to define the 2-dimensional profiles and 3-dimensional parameters.

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7. The method of claim 1, wherein step 2 is facilitated by means of printed measuring utensils.

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- 8. The method of claim 1, wherein step 1 and step 2 are facilitated by means of integrated instruction and data acquisition form.
- 5 9. The method of claim 1, wherein step 3 comprises optical scanning technology.
  - 10. The method of claim 14 wherein step 6 comprises a CNC controlled machine with a rotating tool.
- 11. The method of claim 14 wherein step 6 comprises a CNC controlled machine with a cutting jet.
  - 12. The method of claim 14 wherein step 6 comprises a CNC controlled machine with a cutting wire.
  - 13. The method of claim 14 wherein step 6 comprises a CNC controlled machine with a cutting laser.
- 14. The method of claim 14 wherein step 6 comprises a CNC controlled Rapid
  20 Prototyping machine capable of directly producing a part.
  - 15. The method of claim 1, wherein step 7 comprises data transmitted electronically.
  - 16. The method of claim 1, wherein step 7 comprises data transmitted over the Internet.
  - 17. The method of claim 1 wherein any combination of steps 1-7 may be combined consolidated and/or automated.
- 18. An apparatus enabling the precise creation, fitting, and reproduction of objectscomprising:
  - 1) a means of defining a 2-dimensional profile representation of an object's edges





- a means of defining a 3-dimensional parametric representation of an object's topology
- a means of converting the profile and parametric data into an electronic format suitable for input to computer aided design and manufacturing (CAD/CAM) programs
- 4) a means of creating a virtual CAD model from the profile and parametric data
- 5) a means of calculating Numerical Control (NC) motion commands from the CAD model using CAM technology
- 6) a means of processing an object using Computer Numerical Controlled (CNC) manufacturing technology
- 7) a means of transmitting data throughout the process enabling theses steps to be conducted at any combination of geographic locations.

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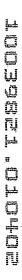
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- 19. A method enabling the precise creation, fitting, and reproduction of objects comprising the steps of:
  - 1) Defining 3-dimensional parametric representations of an object
  - Converting the profile and parametric data into an electronic format suitable for input to computer aided design and manufacturing (CAD/CAM) programs
  - 3) Creating a virtual CAD model from the profile and parametric data
- 4) Calculating Numerical Control (NC) motion commands from the CAD model using CAM technology
  - 5) Processing an object using Computer Numerical Controlled (CNC) machine
  - 6) Transmitting data throughout the process, enabling theses steps to be conducted at any combination of geographic locations.

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- 20. An apparatus enabling the precise creation, fitting, and reproduction of objects comprising:
  - a means of defining a 3-dimensional parametric representation of an object's topology
- 2) a means of converting the profile and parametric data into an electronic format suitable for input to computer aided design and manufacturing (CAD/CAM) programs



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- 3) a means of creating a virtual CAD model from the profile and parametric data
- 4) a means of calculating Numerical Control (NC) motion commands from the CAD model using CAM technology
- 5) a means of processing an object using Computer Numerical Controlled (CNC) manufacturing technology
- 6) a means of transmitting data throughout the process enabling theses steps to be conducted at any combination of geographic locations.